

R&T Project Code: 414f004---06

UNCLASSIFIED

CLEARANCE MEMORANDUM
GRANTS WITH EDUCATIONAL AND NONPROFIT INSTITUTIONS

GRANTEE:

Purdue Research Foundation
Division of Sponsored Programs
Hovde Hall, Third Floor
West Lafayette, IN 47907

GRANT NO: N00014-89-J-1864

AUTHORITY: (X) 10 USC 2358,
as amended, and 31 U.S.C. 6304.

1. Selection Procedure: (X) Broad Agency Announcement
() Other
2. Proposal Identification:
Title: GaAs Gate Dynamic Memory Technology
Number: Date: 25 OCT 1988 As Revised: 22 MAR 1989 and
10 APR 1989
3. Principal Investigator: Michael R. Melloch
4. Instrument: Domestic Research Grant
5. Description of Work: The Grantee's proposed work description is incorporated by reference.
6. Analysis of Cost/Price:
A copy of the proposed budget is attached.

(A) The direct costs have been reviewed by the scientific officer as shown below:

This proposal was received in response to the ONR announcement of research interest published in the COMMERCE BUSINESS DAILY of 28 APR 1988. Award is recommended based on evaluation of the proposal in accordance with the following criteria (BPS items 1-6):

Financial Considerations:

Labor -

The proposed quantities and types of labor (including any consultants and labor provided by subgrantee) are reasonable and necessary for accomplishing the research project.

The proposed labor rates are in line with standard academic or industrial practice for research of this type.

Any consulting at a rate in excess of \$500.00 per day is justified in the "Additional Consultant Information" text item.

Other Direct Costs-

Other proposed direct costs (such as supplies, equipment, ADP, travel, etc.) are reasonable and necessary for accomplishing the research project.

I have reviewed and accepted the proposed budget subject to the grant/contracting officer's verification of rates in indirect costs. Where changes to the original budget were necessary I have had the principal investigator submit a revised budget through official university channels and that revised budget is enclosed. The proposal appears to be fair, reasonable, in the interest of the government, and is consistent with other previous and current efforts of this nature.

Max N. Yoder
Scientific Officer

Other proposed Items:

(B) Indirect costs are reviewed below:

Fringe-Benefit Rate: The proposed rate(s) are in accordance with current and reasonably prospective forward pricing rate(s) and is correctly applied to the proper base.

Indirect Costs: The contractor has proposed indirect costs which are in accordance with current policies or as prospectively agreed to until a further negotiation agreement takes effect. The rate is applied to the proper base.

7. Other Negotiated Terms and Conditions:

A. Negotiated Grant Value: \$305,000.00
If incrementally funded: Increment: \$65,000.00
Through: 31 OCT 1989

B. Period of Performance: Effective: 01 FEB 1989
Completion: 31 DEC 1991

NEGOTIATIONS CONDUCTED WITH: Keven Anne Gipson
CONCLUDED ON: 03 MAR 1989 (317) 494-1077

8. Reasonableness:

In the opinion of the undersigned, the terms and conditions of this action appear to be fair, reasonable, and in the interest of the Government.

(b) (6)

Betti Sue Moya
CONTRACT NEGOTIATOR

1513 (202) 696-4508
CODE TELEPHONE NUMBER

Supplies

02/01/89 to 05/31/90

Chemical Materials

(TCE, Acetone, Methanol Hydrogen Peroxide, Sulfuric Acid,
Hydrochloric Acid, Ammonium Hydroxide, Nitric Acid, Photoresist) \$ 500

GaAs substrates

20 - 2-inch wafers \$3,000

Liquid Nitrogen

(for pumps and as source of pure nitrogen gas) \$ 500

Electron beam photoplates and supplies \$1,000

Molecular Beam Epitaxy System Source Material (Arsenic,
Gallium, and Aluminum) \$1,000

TOTAL \$6,000

06/01/90 to 05/31/91

Chemical Materials

(TCE, Acetone, Methanol, Hydrogen Peroxide, Sulfuric Acid,
Hydrochloric Acid, Ammonium Hydroxide, Nitric Acid) \$ 500

GaAs Substrates

20 - 2-inch wafers \$3,000

Liquid Nitrogen

(for pumps and as source of pure nitrogen gas) \$ 500

Electron beam photoplates and supplies \$1,000

Molecular Beam Epitaxy System Source Material \$1,000
(Arsenic, Gallium, and Aluminum)

TOTAL \$6,000

06/01/91 to 12/31/91

Chemical Materials

(TCE, Acetone, Methanol, Hydrogen Peroxide, Sulfuric Acid,
Hydrochloric Acid, Ammonium Hydroxide, Nitric Acid) \$ 300

GaAs substrates

15 - 2-inch wafers \$2,250

Liquid Nitrogen

(for pumps and as source of pure nitrogen gas) \$ 250

Electron beam photoplates and supplies \$ 200

Molecular Beam Epitaxy System Source Material \$ 500
(Arsenic, Gallium, and Aluminum)

TOTAL \$3,500

Expendable Equipment

02/01/89 to 05/31/90

60 cc pyrolytic boron nitride crucible part # II6830 from Union Carbide Corporation	\$ 800
Nude Ion Gauge filament Part # 971-0018 from Varian Associates, Inc.	\$ 136
3 Nanopure Expendables Kit (D3804) from Curtis Mathes Scientific, Inc.	\$ 725
Replacement Gauge for beam flux monitor, Part # 663396 from Varian Associates, Inc.	\$ 550
Nude Ion Gauge, Part # 971-5008 from Varian Associates, Inc.	\$ 289
TOTAL	\$2,500

06/01/90 to 05/31/91

Reflection Electron Diffraction Phosphorescence Screen, Part # 981-3357 from Varian Associates, Inc.	\$1,750
3 - Nanopure Expendables Kit (D3804) from Curtis Mathes Scientific, Inc.	\$ 725
High Tack Mats, Part # C1631 from Lab Safety Supply	\$ 25
TOTAL	\$2,500

06/01/91 to 12/31/91

4 - High Tack Mats, Part # C1631 from Lab Safety Supply Co.	\$ 83
3 - Nanopure Expendables Kits (D3804) from Curtis Mathes Scientific, Inc.	\$ 725
Nude ion gauge filament, Part # 971-0018 from Varian Associates, Inc.	\$ 136
1 J-3400-00 Hot Plate (H2260-1) from Scientific Products	\$ 77
Ti-Ball sublimation source, Part # 916-0005 from Varian Associates, Inc.	\$ 451
Titanian sublimation pump filaments, Part # 916-0024 from Varian Associates, Inc.	\$ 228
TOTAL	\$1,700

Travel

02/01/89 to 05/31/90

Device Research Conference and Electronic Materials Conference at MIT, June 19-23, 1989

Air fare	\$165/ea x 3 people	\$ 495.00
Taxi		\$ 62.00
Registration	\$100 x 3 people	\$ 300.00
Lodging	\$95/night x 3 nights x 3 people	\$ 855.00
Subsistence	\$24/day x 4 days x 3 people	\$ 288.00
TOTAL		\$2,000.00

06/01/90 to 05/31/91

1990 Workshop on Compound Semiconductor Materials and Devices, West Coast

Air fare	\$395/ea x 2 people	\$ 790.00
Taxi	\$22/ea x 2 people x 2 trips	\$ 88.00
Registration	\$130 x 2 people	\$ 260.00
Lodging	\$120/night x 3 nights x 2 people	\$ 720.00
Subsistence	\$24/day x 4 days x 4 people	\$ 192.00
TOTAL		\$2,050.00

06/01/91 to 12/31/91

1991 Electron Devices Meeting, Washington, DC

East Coast Symposium:

Air fare	\$439/ea x 1 people	\$ 439.00
Taxi	\$20/ea x 1 people x 2 trips	\$ 40.00
Registration	\$150 x 1 people	\$ 150.00
Lodging	\$125/night x 3 nights x 1 people	\$ 375.00
Subsistence	\$24/day x 4 days x 1 people	\$ 96.00
TOTAL		\$1,100.00

Publications

02/01/89 to 05/31/90

Four - three page articles in Applied Physics Letters at \$20
per article and \$85 per page

\$1,100

06/01/90 to 05/31/91

Four - three page articles in Applied Physics Letters at \$20
per article and \$85 per page

\$1,100

06/01/91 to 12/31/91

Two - three page articles in Applied Physics Letters at \$20
per article and \$85 per page

\$ 550



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL RESEARCH
ARLINGTON, VIRGINIA 22217-5000

IN REPLY REFER TO

1513:BSM

24 APR 1989

Purdue Research Foundation
Division of Sponsored Programs
Hovde Hall, Third Floor
West Lafayette, IN 47907

Gentlemen:

Enclosed for your retention is one copy of Grant Number N00014-89-J-1864 which I have signed for the Government. The grant document does not require your signature.

Please acknowledge receipt of this grant by promptly signing and returning the enclosed copy of this transmittal letter to this office to the attention of Code 1513. Keep this original letter for your records.

In the event of any disagreement with the grant provisions, you must notify this office within (30) thirty days of the execution date of the grant. If you have any questions, please contact Betti Sue Moya by telephone on (202) 696-4508.

Sincerely,

(b) (6)

Grants Officer

Enclosure

Acknowledgement of Receipt

By: _____

Date: _____



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OFFICE OF THE CHIEF OF NAVAL RESEARCH
ARLINGTON, VIRGINIA 22217-5000

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Enclosure

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By: _____

Date: _____



ONRDET BOSTON

DEPARTMENT OF THE NAVY

OFFICE OF NAVAL RESEARCH
RESIDENT REPRESENTATIVE
FEDERAL BUILDING, ROOM 286
536 SOUTH CLARK STREET
CHICAGO, IL 60605-1588

IN REPLY REFER TO

ONR-Chi/1432:JJM:mpd
Purd/N00014-89-J-1864
28 May 1992

JUN 1 2 43 PM '92

MEMORANDUM

From: Office of Naval Research Resident Representative, Chicago
To: Office of Naval Research (Code OOCCL)

Subj: Final Report of Inventions and Subcontracts under
Grant N00014-89-J-1864 with Purdue Research Foundation

Encl: (1) Final DD Form 882 (2 copies)

1. Enclosure (1) is forwarded for review and determination.
2. If appropriate, request the certificate below be execute and returned or advise if additional information is required.

(b) (6)

MARY P. DONNEL
Procurement Assistant

FIRST ENDORSEMENT on ONR ResRep Chicago ltr of 28 May 1992

From:

To: Office of Naval Research Resident Representative, Chicago

1. Returned as requested.
2. The undersigned hereby certifies that the subject Grantee has completed the patent reporting requirements under the subject Grant.

(b) (6)

Signature
A. F. KWITNIESKI
Assoc Counsel/Sr. Patent Atty

Date

1992

REPORT OF INVENTIONS AND SUBCONTRACTS (Pursuant to "Patent Rights" Contract Clause) (See Instructions on Reverse Side.)					FORM APPROVED OMB NO. 0704-0076					
1a. NAME OF CONTRACTOR/ SUBCONTRACTOR Purdue Research Foundation		c. CONTRACT NUMBER N00014-89-J-1864	2a. NAME OF GOVERNMENT PRIME CONTRACTOR		e. CONTRACT NUMBER	3. TYPE OF REPORT (check one) <input type="checkbox"/> INTERIM <input checked="" type="checkbox"/> FINAL				
b. ADDRESS (include Zip Code) 1021 Hovde Hall, Room 312 West Lafayette, IN 47907-1021		d. AWARD DATE (YYMMDD) 890201	b. ADDRESS (include Zip Code)		d. AWARD DATE (YYMMDD)	4. REPORTING PERIOD (YYMMDD) FROM: 890201 TO: 911231				
SECTION I - SUBJECT INVENTIONS										
5. "SUBJECT INVENTIONS" REQUIRED TO BE REPORTED BY CONTRACTOR/SUBCONTRACTOR (If "None", so state)										
a. NAME OF INVENTOR(S) (Last, First, M.I.)		b. TITLE OF INVENTION(S)		c. DISCLOSURE NO., PATENT APPLICATION SERIAL NO. OR PATENT NO.	d. ELECTION TO FILE PATENT APPLICATIONS		e. CONFIRMATORY INSTRUMENT OR ASSIGNMENT FORWARDED TO CONTRACTING OFFICER			
					<div style="display: flex; justify-content: space-between;"> <div>UNITED STATES</div> <div>FOREIGN</div> </div> <div style="display: flex; justify-content: space-between;"> <div>YES NO YES NO</div> <div>YES NO</div> </div>					
COOPER, JAMES A. *		BIPOLAR GaAs DRAMS		P90014 * ^{NC} 74566	X					
Cooper, James A.		B. Polar Field-Effect Analog Memory with Nondestructive Readout		P91073						
Melloch, Michael R.		Non Volatile Random Access Memory		P91074	yes					
Melloch, Michael R.		Device "Compound Semiconductor Having Metallic Inclusions and Devices Fabricated Therefrom"		P91075	yes					
f. EMPLOYER OF INVENTOR(S) NOT EMPLOYED BY CONTRACTOR/SUBCONTRACTOR.				g. ELECTED FOREIGN COUNTRIES IN WHICH A PATENT APPLICATION WILL BE FILED.						
i. NAME OF INVENTOR (Last, First, M.I.)		j. NAME OF INVENTOR (Last, First, M.I.)		i. TITLE OF INVENTION		ii. FOREIGN COUNTRIES OF PATENT APPLICATION				
ii. NAME OF EMPLOYER		ii. NAME OF EMPLOYER		Connected to <u>James A. Cooper</u> Invention: (b) (6) Date: 9/2/93						
iii. ADDRESS OF EMPLOYER (include Zip Code)		iii. ADDRESS OF EMPLOYER (include Zip Code)								
SECTION II - SUBCONTRACTS (Containing a "Patent Rights" clause)										
6. SUBCONTRACTS AWARDED BY CONTRACTOR/SUBCONTRACTOR. (If "None", so state)										
a. NAME OF SUBCONTRACTOR(S)		b. ADDRESS (include Zip Code)		c. SUBCONTRACT NO.(S)	d. DAR "PATENT RIGHTS"		e. DESCRIPTION OF WORK TO BE PERFORMED UNDER SUBCONTRACT(S)		f. SUBCONTRACT DATES (YYMMDD)	
					<div style="display: flex; justify-content: space-between;"> <div>CLAUSE NO.</div> <div>DATE (YYMM)</div> </div>				<div style="display: flex; justify-content: space-between;"> <div>AWARD</div> <div>ESTIMATED COMPLETION</div> </div>	
* THIS INVENTION ADDED BY DEPARTMENT OF THE NAVY AFTER EXECUTION OF FORM BY CONTRACTOR. THIS ADDITION REFLECTS EARLIER REPORTING BY CONTRACTOR.										
SECTION III - CERTIFICATION										
7. CERTIFICATION OF REPORT BY CONTRACTOR/SUBCONTRACTOR. (Not required if <input type="checkbox"/> Small Business or <input type="checkbox"/> Non-Profit organization.) (Check appropriate box)										
a. NAME OF AUTHORIZED CONTRACTOR/SUBCONTRACTOR OFFICIAL (Last, First, M.I.) Baitinger, W. E.				c. I certify that the reporting party has procedures for prompt identification and timely disclosure of "Subject Inventions" that such procedures have been followed and that all "Subject Inventions" have been reported.						
b. TITLE Associate Director Division of Sponsored Programs				Signature: (b) (6) DATE (YYMMDD) 920914						